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ABSTRACT

A study examined an interaction effect observed in an earlier study in which texts about three obscure religions were presented to undergraduates who studied them under three conditions: with a study guide that analogized the religion to Christianity; with a study guide that did not employ analogies; and without aid. Scores were significantly lower among subjects using a study guide employing analogies, but since the passage to be learned contained words that explicitly signaled the same analogy as in the study guide, subjects may have confused elements of the two. In the present study, 87 undergraduate students randomly divided into two groups studied two passages with the aid of study guides. One group first read a text designed to serve as an analog that was similar to the target text, while the other group first read a text designed to serve as an analog that was in contrast to the target text. Subjects then filled out study guides about the target text while looking back on the analog. Subjects also responded to a dependent measure which asked them to list facts from memory about the target text. Results indicated that: (1) for the contrasting analogy condition, subjects wrote more correct statements than for the similar condition; and (2) for the similar analogy condition, subjects wrote more incorrect statements than for the contrasting condition, and subjects also wrote more incorrect statements that directly referred to the analog than for the contrasting condition. Findings suggest that the interaction in the earlier experiment resulted from conceptual interference set up by similarities between elements of the analogies in the study guide and the text. (Two tables of data are included; 24 references are attached.) (RS)

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Analogies as Sources of Interference to Learning from Texts with Study Guides

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Analogies as Sources of Interference to Learning from Texts with Study Guides

The use of study guides to facilitate learning from texts has long been advocated (Earle, 1969; Herber, 1970; McClain, 1931; Tutolo, 1977; Vacca, 1977), and many different types of guides have been proposed (Cunningham & Shablak, 1975; Davey, 1986; Olson & Longnion, 1982; Richgels & Hansen, 1984; Wood, 1988). The recent research (Bean, Singer & Cowan, 1985; Hayes, 1988) does suggest support for study guides, though this research has focused on the efficacy of incorporating analogies in the guide material.

In a recent investigation of study guides Wyatt and Hayes (1990) found that, in general, study guides do appear to facilitate learning from texts and that analogies may contribute to their effectiveness. In that investigation, three texts about three obscure religions, Jainism, Druze, and Manichaeism, were presented to undergraduates, who studied each of them with the aid of a study guide that analogized the religion to Christianity, with a study guide that did not employ analogies, and without aid. The orders of presentation of the texts and of the study aids were counterbalanced. Religions were chosen as subject material, following research conducted by Ausubel and Fitzgerald (1961), because they follow a similar structure, and parallel study guide and quiz questions could be written for each religion. However, the contribution of analogies could not be conclusively determined. Scores were significantly lower among subjects using an analogical study guide to learn from one of the passages. Since this passage itself contained words that explicitly signaled

an analogy to Christianity and the other passages did not, scores of Ss who studied this passage with an analogical study guide may have encountered conceptual interference set up by the presence of explicit analogy in both the passages and the study guide.

Table 1

Mean Performance on Test of Learning from Passages--Experiment 1

	Treatment		
Text	Control	Study Guide	Analogical Study Guide
Druze	13.04 (3.14)[a]	13.76 (3.06)	14.88 (2.76)*
Jainism	13.69 (2.66)	13.96 (2.49)	14.64 (2.87)
Manichaeism	11.88 (3.75)	15.50 (2.53)*	13.00 (2.55)

[a] Standard deviations are in parentheses

* Indicates significant p-value

If the analogy of the study guide replicated the analogy signaled in the passage, Ss may have confused elements of the two. Gick and Holyoak (1983) found that subjects were better able to solve problems with the aid of analogy with contrasting features than with analogy with features similar to the target problem. Spiro and colleagues (1988) have also advanced the notion that

analogies may sometimes mislead readers. The present research attempted to explain the interaction effect we observed in our earlier experiment.

Experiment. Undergraduate students (N = 87) studied two passages with the aid of study guides. Students were randomly divided into two groups for comparison. One group studied the text after reading a similar analogical text, and one group studied the text after reading a contrasting analogical text. A true experimental design was used.

Materials were three similarly structured passages on three early civilizations, each 1,000 words in length. The subject matter of the text was an early civilization entitled "Kemet," which we invented to control for prior knowledge. One group first read a text about Ancient Sumer designed to serve as an analog that was similar to Kemet. The other group first read a text about Ancient Egypt designed to serve as an analog that was contrasting to Kemet. Subjects then filled out study guides that were designed to induce the subjects to look backward toward the analog while studying the text on Kemet. The study guides asked subjects to list facts about the analogs that were similar to Kemet. Subjects were allowed to use both texts while filling out the study guide. Finally, without the aid of the texts or study guides, subjects responded to a dependent measure which asked them to list facts from memory about Kemet only. The dependent measure was structured in exactly the same fashion as the study guides. No teaching was performed; subjects learned the material independently.

Results. Test performance differed according to treatment condition. For the contrasting analogy condition, subjects wrote more correct statements than for the similar condition. For the similar analogy condition, subjects wrote more incorrect statements than for the contrasting condition. For the similar analogy condition, subjects also wrote more incorrect statements that directly referred to the analog than for the contrasting condition.

Table 2

Mean Performance on Test of Learning from Passages--Experiment 2

Student Responses	Analog Features		Significance		
	Similar	Contrasting	t	*p*	ES
Correct	14.33 (6.57)[a]	17.88 (6.15)	2.54	.0064	.56
Incorrect	5.86 (3.40)	4.63 (2.66)	1.82	.0345	.40
Related to Analog	2.55 (1.81)	1.63 (1.60	2.43	.0083	.53
Close	2.45 (1.55)	2.61 (1.33)			
Unrelated to Text	.57 (1.03)	.39 (.83)			

[a] Standard deviations are in parentheses

Importance. The data support the conclusion that the interaction in Experiment 1 resulted from conceptual interference set up by similarities between elements of the analogies in the study guide and the text. In Experiment 2, the similarities of the Sumer analog to the Kemet target text also appear to have interfered with subjects' attempts to learn the new material. That conclusion is most strongly supported by the significantly higher amount of incorrect statements made by Ss that directly referred to the Sumer analog. The contrasting Egypt analog was more effective in helping subjects to learn the new information about "Ancient Kemet."

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